

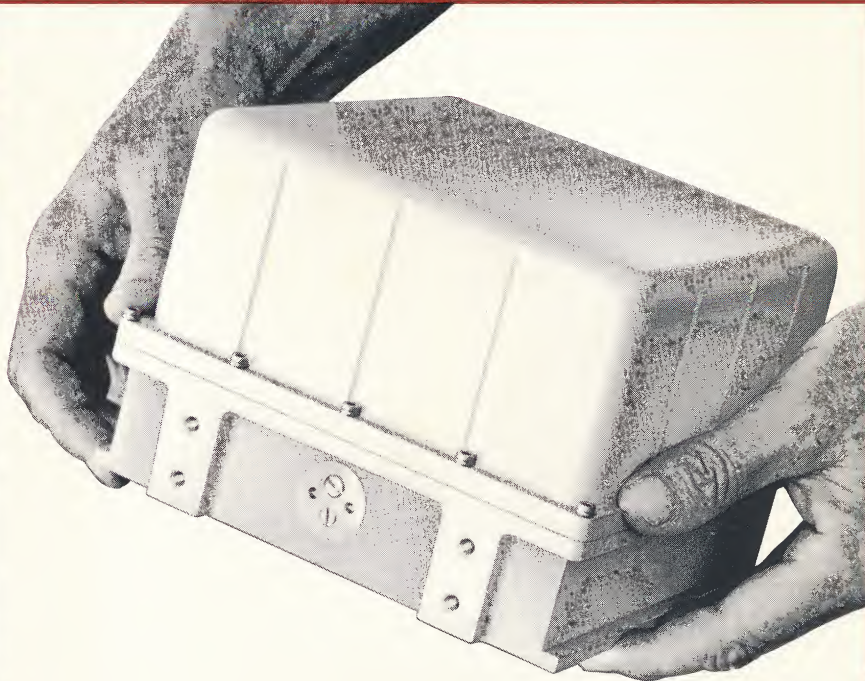


GENERAL PRECISION, INC. | LIBRASCOPE GROUP

PRODUCT DATA

L207

MILITARIZED DISC MEMORY



DESCRIPTION

The L207 militarized disc memory, produced by Librascope Group of General Precision, Inc., provides high-reliability performance in extreme environments, meeting or exceeding the requirements of Mil-E-5400 G Class II. It has a capacity in excess of 1 million bits, yet weighs only 11 lbs. and measures only 7¼ x 7¼ x 5". Average access time is 4 milliseconds. The memory element is a 6½" aluminum disc coated with nickel cobalt. Data is stored on both sides. The memory employs a flying-head-per-track for read-write operations. A head assembly consists of 12 heads on a bar. The heads can be mounted individually for recirculating-register applications.

APPLICATIONS

Designed especially for military and space applications, the L207 memory can be used with any type of shipboard, airborne, or fieldable data

system. It is equally useful as the main memory, for buffer storage, or to supplement other memories.

ROTATING STRUCTURE

The entire rotating structure is designed to minimize shifting of the disc axis, either during operation or as a result of temperature cycling. The aluminum disc is thick enough to have its lowest resonant frequency well above the Mil-E-5400 range. It is fitted onto a hollow aluminum spindle that has the same coefficient of expansion as the disc. The assembly rotates on a solid shaft attached to the top head plate, by means of a preloaded duplex ball bearing. The spindle's wall thickness is such as to absorb elastically the thermal expansion differential between it and the bearing. The close coupling between disc and head plate minimizes dimensional shift between disc and heads.

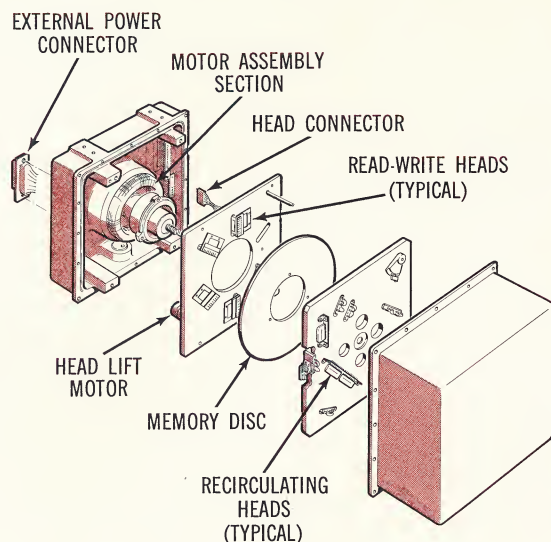
The other end of the spindle is

coupled to the shaft by a loose, slightly preloaded bearing. This prevents a torque increase, which would result otherwise from differential expansion at extreme temperatures. The end of the bearing shaft is attached to the case through a diaphragm mounting that isolates the rotating structure from external axial stress.

FLYING HEADS

Librascope's flying-head-per-track design prevents the excessive wear on disc and heads that results from contact at operating speed. This configuration is a straightforward mechanical assembly that improves reliability by eliminating the need for complex head-positioning structures. During start-up and slow-down, a motor-operated lifting mechanism reduces the spring load to 20 grams. The use of one head for each data track enhances such characteristics as access time, programming ease, and organizational flexibility.

L207 MILITARIZED DISC MEMORY



L207 MILITARIZED DISC MEMORY-SPECIFICATIONS

PHYSICAL SPECIFICATIONS

| | |
|------------|--|
| Dimensions | 7 1/4 in. wide x 7 1/4 in. high x 4.88 in. deep. Packaged to fit into 3/4 ATR. O-ring sealed |
| Weight | 11 lbs. approx. |
| Mounting | To heat sink plate at motor end |

ELECTRICAL AND POWER REQUIREMENTS

| | |
|---------------------|--|
| Motor | 12-pole induction type, pancake configuration, double squirrel cage construction |
| Power consumption | 70 watts |
| Power requirements: | |
| Motor | 105/208 volts, 400 cycle ± 20 cps, 3 phase (Mil Std 704) |
| Retraction | Cam-operated lifting mechanism |

ENVIRONMENTAL CHARACTERISTICS

| | |
|-----------------------|--|
| General | Meets or exceeds Mil-E-5400 G Class II |
| Temperature/Altitude | 10°C above Mil-E-5400 G Class II, Table II requirements |
| Temperature shock | 1° per second, max. |
| Shock | 18 impacts at 15 G |
| Vibration | Per Mil-E-5400 G Figure 5, Curve IV, with frequency extended to 2000 cps |
| Acceleration | 30 minutes at 20 G in any axis |
| Salt spray and fungus | Per Mil-E-5400 G |
| Life | Limited by bearing life. 90% survival under continuous acceleration: 1 G 48,500 hrs. 10 G 13,500 hrs. 20 G 4,500 hrs. 30 G 1,500 hrs. |
| MTBF | 10,000 hours, approx. |

DISC-FILE SPECIFICATIONS

| | |
|-----------------------|--|
| Number of discs | 1 |
| Disc diameter | 6 1/2 in. |
| Magnetic media | Electroless cobalt |
| Speed | 8000 rpm |
| Heads | Fixed; C. T.; bifilar wound, integral section diodes |
| Read back voltage | 20 mv p - p |
| Write current | 80 ma |
| Inductance, full coil | 40 μ Henry |
| Track width | 0.015 in. |
| Track guard | 0.006 in. |
| Tracks per inch | 48 |

TYPICAL FILE ORGANIZATIONS

The head-per-track design of the L207 memory affords extremely flexible file organization. Data can be written or read in serial or parallel format. The number of parallel bits is limited only by the size of the file, or by the requirements of the data processor. In the examples below, Organization A is a typical permanent memory in which a 16-bit word is handled as two 8-bit parallel bytes. Organization B has both permanent memory capability and recirculating registers; individually positioned read and write heads are used for the recirculators. Ferranti recording is used.

ORGANIZATION A

| 8-Bit Parallel Operation | |
|---------------------------|--------------------|
| Capacity, total bits | 1,075,200 |
| Access time, milliseconds | 7.9 max. 4 avg. |
| Transfer rate, bit/sec. | 9,040,000 |
| Tracks | 120 |
| Bit density, bits/in. | 955 avg. |
| Clock rate, MC | 1.13 |
| Slip | 5% max. |
| Word length, bits | 16 |
| Tracks per word | 8 |
| Data bits/track/word | 2 |
| Words/sector | 16 |
| Data bits/sector/track | 32 |
| Spacer, bits | 1 |
| Parity, bits | 2 |
| Total bits/sector/track | 35 |
| Sectors/revolution | 256 |
| Total bits/track | 8960 |

ORGANIZATION B

| 32-Bit Series Operation 72-Track Permanent Memory | |
|--|--------------------|
| Permanent memory capacity, total bits | 608,256 |
| Recirculators | 19 |
| Typical recirculators (n=33 bits) | |
| Track 15 (two read heads) | 16n and 64n |
| Track 14 | 16n |
| Track 17 | 126n |
| Track 19 | 210n |
| Access time including slip, milliseconds | 7.9 max. 4 avg. |
| Permanent storage tracks | 72 |
| Bit density at innermost track, bits/in. | 900 |
| Clock rate including slip, MC | 1.07 |
| Slip | 5% |
| Word length, bits | 32 |
| Spacer | 1 |
| Words/track | 256 |
| Data bits/track | 8192 |
| Total bits/track | 8448 |
| Clock tracks | 1 + 1 spare |
| Sector address tracks | 1 + 1 spare |

COMPONENTS DIVISION

**GP GENERAL
PRECISION INC.**

LIBRASCOPE GROUP

1100 FRANCES COURT • GLENDALE, CALIFORNIA 91201
Telephone (Area Code 213) 245-8591 • TWX 213-240-2165